EXHIBIT 12

1   UNITED STATES DISTRICT COURT

                    NORTHERN DISTRICT OF CALIFORNIA

2

3   GOOGLE LLC,   )

4   PLAINTIFF,   )

5   VS.   ) Case No.

6   SONOS, INC.,   ) 3:20-cv-06754-

7   DEFENDANT.   ) WHA

8   _____)

9   SONOS, INC.,   )

10   PLAINTIFF,   )

11   VS.   ) 3:21-CV-07559-

12   GOOGLE, LLC,   ) WHA

13   DEFENDANT.   )

14   _____)

15   C O N F I D E N T I A L

16

17   (THIS TRANSCRIPT HAS BEEN DESIGNATED

18   HIGHLY CONFIDENTIAL PURSUANT TO PROTECTIVE ORDER)

19

20   ZOOM VIDEOTAPED DEPOSITION OF

21   DAVID NICHOLSON

22   THURSDAY, APRIL 21, 2022

23

24   JOB NO. 5193787

25   REPORTED BY: D'ANNE MOUNGEY, CSR 7872

                                              Page 1

1 we've been discussing.
2   When making an RPC to Get Watch Next, the
3 message type that is sent is a Watch Next request
4 and the message type that the server sends back is a
5 Watch Next response. And I think what I said was   12:39:57
6 that the Watch Next response structure of that
7 response is different for the receiver devices than
8 it is for the phone center devices.
9   Q   So how is the Watch Next response structure
10 different for the receiver device?   12:40:15
11   I guess let me ask that differently.
12   What's different between the Watch Next
13 response structure that's received on the receiver
14 device versus the Watch Next request that's sent
15 from the sender?   12:40:33
16   A   Can you repeat that question again?
17   Q   Yeah. I guess I'm trying to understand, I
18 guess that the -- I guess what I'm trying to say
19 here is: What are the contents of that Watch Next
20 response data structure on the receiver side?   12:40:51
21   MR. KAPLAN: Object to form, calls for a
22 narrative.
23   Go ahead.
24   THE WITNESS: Sure. So it could be very
25 different depending on the context of what type of   12:41:04

Page 106

1 receiver it is and what version of the receiver.
2   Is it a screen receiver or screenless
3 receiver, and so on and so forth?
4   So they can vary drastically.
5   But in all those cases, the structure of   12:41:19
6 the responses for those receivers is different than
7 the structure of the response -- the structure and
8 contents of the response is different.
9 BY MR. PAK:
10   Q   How are they different?   12:41:31
11   A   So I can give one -- start, I guess, with
12 one concrete example.
13   So they're both of the message type Watch
14 Next response. This is a proto message, protocol
15 buffer. In the casting case on the YouTube Music   12:41:53
16 sender, on the sender device, the renderers are all
17 those videos that you see, "Come Together," "Here
18 Comes the Sun," those are all nested underneath
19 another message type called a playlist panel
20 renderer.   12:42:22
21   And all of the messages -- all the
22 renderers that you see there for "Come Together,"
23 "Here Comes the Sun," et cetera, are called playlist
24 panel video renderers.
25   So, again, when you're not casting on a   12:42:35

Page 107

1 sender device, what you see here in this list is a
2 playlist panel renderer with a list of playlist
3 panel video renderers within it and none of that is
4 included in the response that's sent to receivers.
5   I'm not as familiar with the structure of   12:42:56
6 the response and receivers, but I think the closest
7 analogy to the playlist panel video renderer is
8 something called an Autoplay renderer, which
9 contains somewhat -- you might describe as pointers
10 to other videos that the receiver could play next.   12:43:16
11   Does that help answer the question?
12   Q   Yeah. I think that was very helpful.
13   You know, I want to go back to Exhibit 18,
14 and specifically I want to look at page 9. And
15 looking at figure 3, there's a sequence diagram   12:43:49
16 here.
17   Does this sequence diagram look familiar to
18 you?
19   MR. KAPLAN: We're on page 9, figure 3 of
20 Exhibit 18.   12:44:03
21   THE WITNESS: Yeah. I have that open. I'm
22 looking at it right now.
23   MR. KAPLAN: Okay.
24   THE WITNESS: Give me a moment to maybe
25 digest.   12:44:13

Page 108

1   (Document reviewed by the witness.)
2   THE WITNESS: I don't know if I've ever
3 seen this before or not.
4   MR. PAK: Okay. Maybe I should introduce
5 another screenshot here. Exhibit 21.   12:44:41
6   (Whereupon, Sonos Exhibit 21 was
7   marked for identification by the
8   Court Reporter.)
9   MR. PAK: Let me know when you have that
10 open.   12:44:54
11   THE WITNESS: I have that open.
12 BY MR. PAK:
13   Q   Okay. Again, I'll represent to you these
14 are screenshots that I took with the Pixel 6 phone
15 recently. You can see it's -- it's kind of   12:45:08
16 screenshots from the YouTube Music app and we're in
17 the casting state.
18   Specifically I want to run through here,
19 this is a scenario where you have the expanded view
20 of the up next tab with a list of songs, and then   12:45:27
21 one of the songs gets removed from the up next tab.
22   So if you see in the bottom right
23 screenshot, you see that "Colors" is the currently
24 playing media item or song and -- or song after that
25 is a song called "OCT 33"; right?   12:45:52

Page 109

28 (Pages 106 - 109)

1   A   In the bottom right --
2   MR. KAPLAN: Hold on a second.
3   Object to form and authenticity.
4   Go ahead.
5   THE WITNESS: In the bottom right image in   12:46:05
6   this grid of four images, I see what looks to be the
7   expanded up next view and renderers is the first one
8   there, says "Colors" and the second one says "OCT
9   33."
10   BY MR. PAK: 12:46:23
11   Q   Taking a step back here, if you look at the
12   top right screenshot, do you see that there's a song
13   called "Colors" and then the next song after that is
14   "River"?
15   A   Yeah.   12:46:37
16   Q   Do you see that on the bottom right
17   screenshot that song called "River" was removed from
18   the auto next app?
19   MR. KAPLAN: Object to form.
20   THE WITNESS: I see the image on the top   12:46:55
21   right shows the expanded up next tab and the first
22   three renderers I see there are "Colors," "River,"
23   "OCT 33." And on the bottom right image, I see the
24   expanded up next tab and the first three renderers.
25   There are "Colors," "OCT 33" and "I Put a Spell on   12:47:16

Page 110

1   You," but I don't think just looking at those two
2   images alone can I verify or validate that point.
3   BY MR. PAK:
4   Q   And that's fair.
5   The question I really want to ask you here   12:47:30
6   is: Let's say "Colors" is -- this is all in the
7   casting state.
8   So after "Colors" -- or while "Colors" is
9   playing, right, if a user removes the song called
10   "River," which is the next song list on the top   12:47:50
11   right screenshot, such that "OCT 33" becomes the
12   next song was, how does the cast receiver know that
13   it has to play "OCT 33" instead of the song "River"?
14   MR. KAPLAN: Object to form, vague, and
15   calls for a narrative.   12:48:18
16   THE WITNESS: I would like to clarify one
17   thing as well.
18   The screen -- or the image on the top left
19   shows that the user's in the casting state. The
20   cast icon is, I guess, filled in, for a lack of a   12:48:33
21   better description. The other three screenshots,
22   it's unclear if the user is casting or not casting.
23   There's no indication in those screenshots that the
24   user is in the cast experience or in the non-cast
25   experience --   12:48:53

Page 111

1   BY MR. PAK:
2   Q   Okay. So --
3   A   -- with that clarification.
4   Q   So maybe -- the screenshots are really to
5   help kind of facilitate our discussion.   12:49:02
6   What I really want to know here is, when
7   you're in the casting state, right, and you have,
8   let's say, 3D items in the up next tab, if I
9   remove -- after -- so there's a currently play media
10   item and there's a second media item and the third   12:49:19
11   media item in the up next queue.
12   Do you follow?
13   A   There's renderers.
14   Q   What you call renderers. I've been calling
15   them media items or songs, but you have three songs   12:49:30
16   in the expanded up next tab.
17   In that scenario, if I remove the next song
18   such that the third song becomes the next song, how
19   does the cast receiver know that it has to play that
20   third media item, that third song, as opposed to   12:49:55
21   that second song that was removed?
22   A   I don't know the details of that.
23   Q   But before -- this is going back to the
24   hypothetical where you have the three songs and the
25   expanded up next tab.   12:50:31

Page 112

1   The receiver needs to know it has to play
2   those three songs; right?
3   MR. KAPLAN: Object to form, incomplete
4   hypothetical, vague.
5   THE WITNESS: So when you start playback on   12:50:45
6   whichever container or radio, or what this was, the
7   receiver device doesn't necessarily have to know
8   what all those videos are.
9   BY MR. PAK:
10   Q   Does the receiver have to know what the   12:51:06
11   next song is?
12   A   Can you clarify the question?
13   Can you clarify the question?
14   Q   Yeah.
15   So in this hypothetical where you have   12:51:20
16   three songs in the expand up next tab, right, the
17   song in the casting session -- in the casting state,
18   what information does a receiver need to know in
19   order to play the currently playing song but also
20   know that it has to play the next song after that   12:51:45
21   currently playing song?
22   MR. KAPLAN: Object to form, calls for
23   narrative, vague.
24   THE WITNESS: I'll try to give an answer.
25   So the Watch Next response is returned to   12:52:04

Page 113

29 (Pages 110 - 113)

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1 the receiver will contain video ID, or the currently	1 (Whereupon, Sonos Exhibit 22 was
2 playing song, somewhere in the response tree. I	2 marked for identification by the
3 don't know the intricate details of where in the	3 Court Reporter.)
4 response tree.	4 MR. PAK: Let me know when you have that
5 Ultimately the client will have to make an 12:52:27	5 open. 12:55:46
6 RPC -- sorry.	6 THE WITNESS: Okay. It just popped up.
7 When I say "client" there, what I mean is	7 Here we go. I have this open. I'm on page 1.
8 the receiver device will have to take the video ID	8 BY MR. PAK:
9 of that currently playing song and send a Get Player	9 Q Do you recognize this document?
10 request, include the video ID in that request, Get 12:52:46	10 A Yes. 12:55:56
11 Player will then return -- in the successful case	11 Q Do you see you're listed as one of the
12 where there's no errors, it should return at least	12 contributors?
13 one URL and then the receiver device needs to make	13 A Yes.
14 an RPC to fetch the media bytes for the currently	14 Q Does that mean you wrote this document?
15 playing songs from that URL for the Get Player. 12:53:16	15 A Myself and Jacob Zimmerman were the leading 12:56:15
16 So that's how the receiver device, I	16 contributors on this and we consulted with many
17 suppose, knows how to play the currently playing	17 other engineers.
18 song.	18 Q Who is Jacob Zimmerman?
19 For the next playing song, there's an	19 A He is an engineer on YouTube Music and his
20 Autoplay renderer. I mentioned this before. It's 12:53:31	20 name is Jacob Zimmerman. 12:56:32
21 returned as part of the Watch Next response and that	21 Q Is he still with Google?
22 Autoplay renderer contains -- in some circumstances	22 A Yes.
23 may contain -- I don't remember the exact name of	23 Q Is he someone that you report to or --
24 the message, but will contain information about what	24 A No.
25 video ID should the device play next if the user 12:53:54	25 Q -- just -- okay. 12:56:52
Page 114	Page 116

1 moves into the next song.	1 Do you know what the purpose of this
2 And when that happens, the receiver device	2 document was?
3 will then -- it could Get Player called with that	3 A Yes.
4 video ID, the player will respond -- again, in the	4 Q What was the purpose of this document?
5 successful case, will respond with at least one URL, 12:54:10	5 A Purpose of this document was to provide a 12:57:04
6 then when the receiver is ready to play that, the	6 design for supporting loop functionality in YouTube
7 receiver will fetch the media bytes from that URL.	7 Music while casting.
8 BY MR. PAK:	8 Q Do you know what an Autoplay renderer is?
9 Q Now, does the receiver store the video IDs?	9 MR. KAPLAN: Object to form, asked and
10 A What do you mean by "store the video IDs"? 12:54:30	10 answered. 12:57:43
11 Q Does the receiver store the video IDs	11 THE WITNESS: Yes. We spoke about Autoplay
12 locally within memory?	12 renderers in the context of cast receiver devices.
13 MR. KAPLAN: Object to form, vague.	13 BY MR. PAK:
14 THE WITNESS: Yeah. I mean, the	14 Q Okay. Now I want to skip to page 23.
15 responses -- the receiver receives the Watch Next 12:54:49	15 There are several comments here from David. 12:58:13
16 response and that response contains video IDs. I	16 Is that a reference to you?
17 think by definition, those video IDs are somewhere	17 I guess phrased differently: Are these
18 in memory.	18 your comments?
19 MR. PAK: I'm going to introduce another	19 A I don't remember.
20 doc here. I'll try to find it here. 12:55:13	20 MR. KAPLAN: Object to form. 12:58:35
21 It's going to be Exhibit 22. And for the	21 BY MR. PAK:
22 record, it's Bates labeled Bates number ending in	22 Q You don't know if these are comments that
23 51490.	23 you left or not?
24 ///	24 MR. KAPLAN: Object to form, asked and
25 /// 12:55:41	25 answered. 12:58:52
Page 115	Page 117

30 (Pages 114 - 117)